



WINZLER & KELLY
CONSULTING ENGINEERS

Ref: 90-129701-049

June 8, 2006

Mr. Robert Stone
Humboldt County Department of Health and Human Services
Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

**Re: Groundwater Monitoring Data for April 2006
Former Dutra Trucking, 5005 Boyd Road, Arcata, California
LOP # 12264**

Dear Mr. Stone:

On behalf of Mr. Frank Dutra, Winzler & Kelly Consulting Engineers (Winzler & Kelly) is submitting this report of groundwater monitoring data collected in April 2006 for the above-referenced site.

The purpose of this report is to document the activities, results, and findings of the periodic groundwater monitoring program. All figures and tables referred to herein are included in Appendix A and Appendix B, respectively. Laboratory analytical reports are contained in Appendix C, Standard Operating Procedures (SOPs) are contained in Appendix D, and field notes are contained in Appendix E.

Groundwater Monitoring Activities

On April 26 and 27, 2006, a Winzler & Kelly geologist obtained water levels from the five site monitoring wells following a period of very heavy rainfall. Monitoring well, MW-4, contained inadequate water for sampling. Monitoring well MW-1 was not purged prior to sampling due to minimal water present in the well. Monitoring wells MW-2, MW-3 and MW-5 were purged and sampled according to Winzler & Kelly SOPs for *Monitoring Well Purging and Sampling Activities* (Appendix D). The on-site production well was gaged for depth to groundwater and total depth of the well. Site vicinity, monitoring well locations, and previous groundwater gradient information are shown on Figures 1, and 2, respectively (Appendix A).

Aquifer Data

Depth to water measurements were collected after removing well caps and allowing groundwater to stabilize for at least 15 minutes. No pressure was noted upon opening any the wells. Cumulative water level measurements are presented in Table 1 (Appendix B). Hydrologic analyses are



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calculated from surveyed well positions and casing elevations and measured depth to water data in accordance with Winzler & Kelly SOPs (Appendix D).

Ontiveros & Associates surveyed the well locations and top of well elevations on March 3, 2004. Top of casing elevations were surveyed to the nearest 0.01 foot above mean sea level (msl) relative to the NAD88 datum, as required for submittal of survey data to the State Water Resource Control Board Geotracker System (Geotracker). Well locations were surveyed relative to the State Plane Coordinate System and in degrees latitude/ longitude to seven decimal places. Cumulative aquifer data are presented on Tables 1 and 2, (Appendix B). These survey data and periodic groundwater calculations are electronically submitted the Geotracker database.

Across the approximately 100 feet between monitoring wells at this site, measured groundwater elevation differed by approximately 15 feet on April 26, 2006. Per our April 2006 calculations, groundwater gradient was approximately 23 feet per 100 feet along the gradient direction. As the former Dutra Trucking site is a nearly flat floodplain, these groundwater data appear to indicate that a perched condition is present below part of the site, to explain the calculated steep groundwater gradients.

Groundwater Sampling

On April 26 and 27 2006, monitoring well MW-2, MW-3 and MW-5 were purged and sampled in accordance with Winzler & Kelly Standard Operating Procedures (Appendix D). All monitoring well sampling was performed after removing three wetted casing volumes of water from the wells and allowing the water levels to recover to at least 80% of its pre-purge level. Monitoring well MW-1 was sampled without purging due to anticipated slow recharge. Monitoring well MW-4 was not sampled due to insufficient water in well to enter sampling bailer. Monitoring well MW-5 was sampled approximately 12 hours after purging due to slow recharge.

As part of the quarterly monitoring program, groundwater samples collected from the site monitoring wells were analyzed for the following:

- Total Petroleum Hydrocarbons as Diesel (TPH-D) by EPA Method 3550; silica gel cleanup and retesting for TPH-D was performed on samples producing detectable results.

Groundwater Analytical Results

Groundwater samples collected from wells outside of the former UST excavation produced no detectable TPH-D contaminants for the April 2006 sampling event. In April 2006, groundwater within the excavation (MW-3) produced TPH-D at 1500 parts per billion (ppb) before silica gel cleanup and 58 ppb following silica gel cleanup.



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Laboratory analytical results and this full report will be submitted electronically to the State Water Resources Control Board (SWRCB) Geotracker System. Cumulative laboratory analytical results are presented in Table 3 (Appendix B). A copy of the current laboratory analytical report is included in Appendix C.

Quality Assurance/Quality Control (QA/QC)

Field QA/QC was provided by adherence to the Winzler & Kelly Standard Operating Procedures for "Monitor Well Purging and Sampling Activities", contained in Appendix D.

Laboratory QA/QC was provided by the use of lab Method Blanks to preclude false positive analysis of analytes and the use of Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (LCSD) samples to evaluate the percentage recovery of target analytes and reproducibility during analysis.

The laboratory provided the following notes regarding QA/QC:

"THIS IS AN AMENDED REPORT. The diesel result prior to silica gel cleanup was added per client's request.

All samples submitted for silica gel cleanup were initially analyzed for diesel. The samples showing no detectable levels of the analyte were not subjected to the cleanup procedure.

TPH as Diesel w/ Silica Gel Cleanup:

Sample MW-3 contains material similar to degraded or weathered diesel oil.

The Laboratory Control Sample Duplicate (LCSD) recovery as below the lower acceptance limit for diesel. The Laboratory Control Sample (LCS) recovery was within the acceptance limits; therefore the data were accepted.

TPH as Diesel

The low surrogate recovery for sample MW-1 may be due to the sample matrix."

Discussion

Groundwater gradient was calculated to flow to the northwest (288 degrees) in April 2006 at 22.87 feet per 100 feet. These calculated data are suspect and are likely an artifact of (1) multiple aquifers being tapped on different portions of the site or (2) recharge of groundwater to some wells from a source other than the regional unconfined aquifer.



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Groundwater quality as sampled from monitoring wells outside of the former UST excavation produced no detectable TPH-D contaminants for the April 2006 sampling event. In April 2006, groundwater within the excavation (MW-3) produced TPH-D at 1500 ppb before silica gel cleanup and 58 ppb following silica gel cleanup. If a similar decrease in TPH-D concentrations is realized during the July 2006 sampling event, a request will be made to recommend this site for regulatory closure.

Conclusions

- In April 2006, monitoring wells located outside of the former UST excavation produced no detectable concentrations of TPH as diesel.
- In April 2006, monitoring well MW-3 located within the former UST excavation produced widely variable results for TPH as diesel with silica gel cleanup (58 ppb) and without silica gel cleanup (1500 ppb).
- The April 2006 groundwater sampling event encountered groundwater in all five site wells. Four of the five wells produced adequate groundwater for sampling.
- A production well north of the monitoring well field was gaged indicating that the piezometric surface of the local aquifer is 25.7 feet below the ground surface. This depth to static groundwater is in keeping with the gage data recorded from the deeper monitoring wells MW-1, MW-4, and MW-5.
- Groundwater elevation and contaminant data appear to indicate that groundwater in the former UST pit and along the eastern side of the former UST excavation is perched, possibly receiving recharge water from a freeway drainage pipe.
- Compact, fine-grained soils and a perched unconfined aquifer appear to restrict the migration of residual diesel contamination in groundwater to the confines of the former tank excavation.
- The next groundwater sampling event is scheduled for July 2006.

Recommendations

- In April 2006, groundwater from monitoring well MW-3, located within the former UST excavation, produced TPH-D at 1500 ppb before silica gel cleanup and 58 ppb following silica gel cleanup. If a similar decrease in TPH-D concentrations is found following silica gel cleanup during the July 2006 sampling event, a request will be made to recommend this site for regulatory closure.
- If the July 2006 sampling event does not provide a contrast of TPH-D results before and after silica gel cleanup, Winzler & Kelly will schedule a limited subsurface investigation to investigate if the shallow aquifer is draining to a deeper aquifer via the 25 foot monitoring wells. This work has been requested by the HCDEH. This request will require the installation of two 15 foot well points or shallow wells



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June 8, 2006

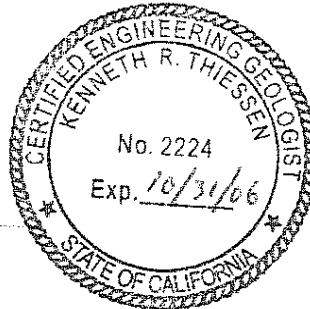
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approximately midway between existing monitoring wells MW-1 and MW-4 as well as between MW-4 and MW-5.

If you have any questions or comments, please do not hesitate to call.

Sincerely,
WINZLER & KELLY

Kenneth Thiessen, CEG #2224
Geologist



tc

Enclosures: Appendix A: Figures
Figure 1 Site Vicinity Map
Figure 2 Gradient Site Map
Appendix B: Tables
Table 1 Groundwater Level Measurements
Table 2 Groundwater Gradient Data
Table 3 Groundwater Analytical Results
Appendix C: Laboratory Analytical Reports
Appendix D: Standard Operating Procedures
Appendix E: Field Notes

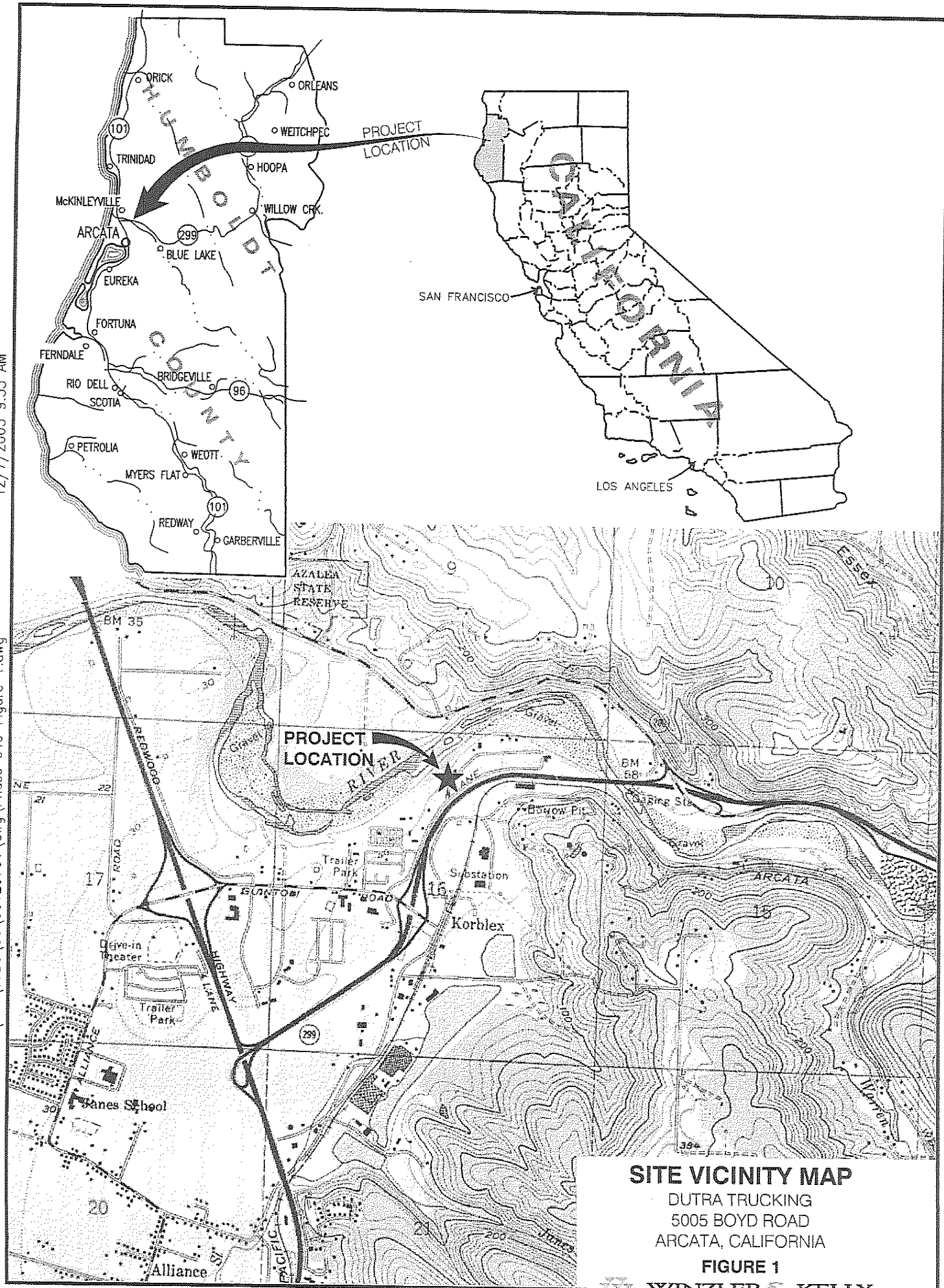
Distribution list:

Mr. Frank Dutra
P.O. Box 898
Willow Creek, California 95573

Mr. Robert Stone
Humboldt County Department of Public Health
Division of Environmental Health
100 H Street, Suite 100
Eureka, California 95501

Appendix A

Figures



6/8/2006 3:05 PM

J:\CAD\JOBS\90\90129701\dwg\Phase 049 Figure 2.dwg

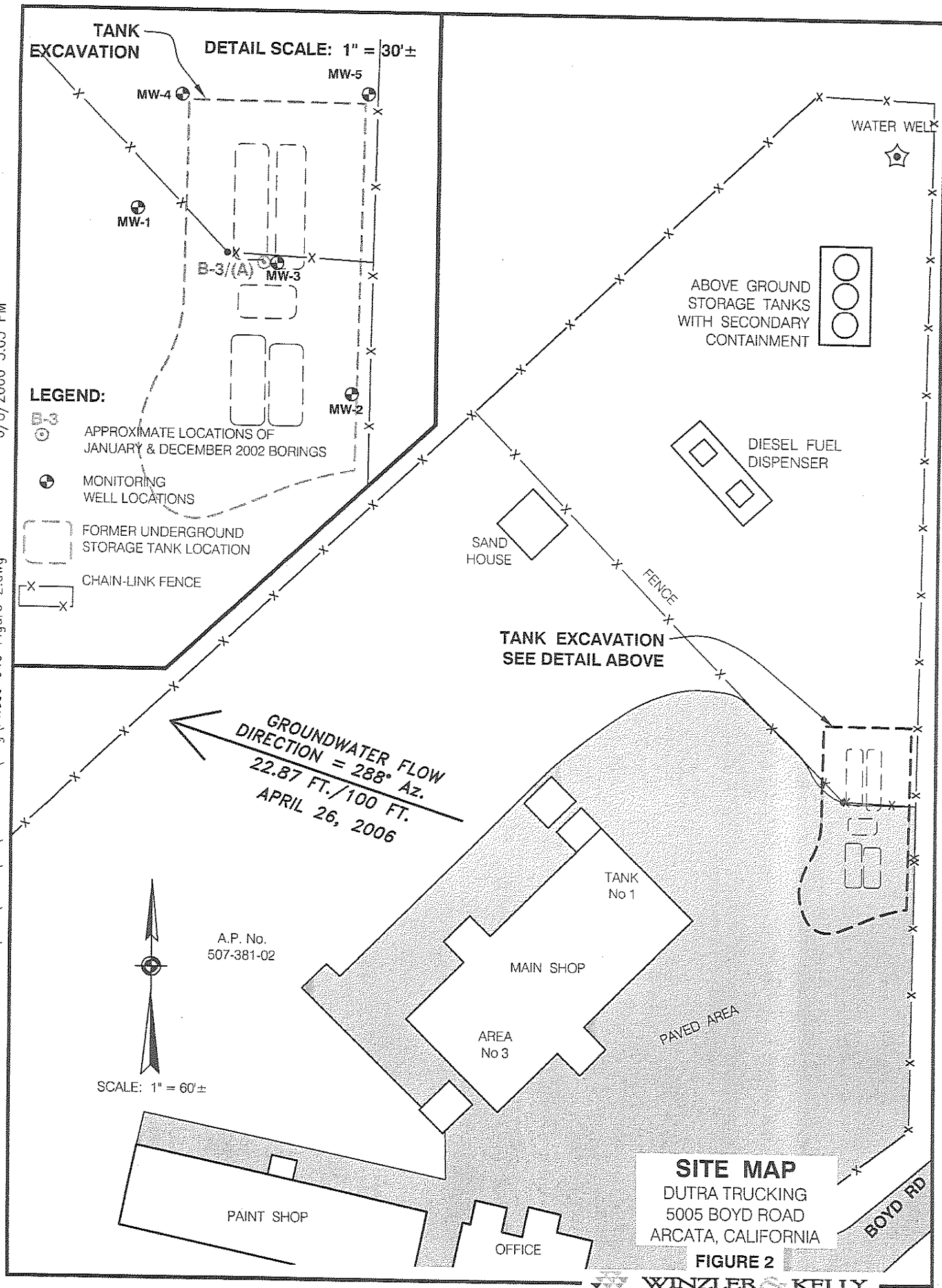


TABLE 1
WATER TABLE ELEVATION MEASUREMENTS
Former Dutra Trucking, LOP #12264

Well Number	Date	Groundwater Elevation (ft)	Top of Casing (ft)	A Depth to Water (ft)	B Depth to Product (ft)	(A-B=C) Product Thickness (ft)	D Correction Factor (C x 0.729*)	A-D Equivalent Depth to Water (ft)
MW-1	4-Feb-04	33.48	48.03	14.55	0.00	0.00	0.00	14.55
	3-May-04	DRY	48.03	DRY	DRY	DRY	DRY	DRY
	30-Nov-04	DRY	48.03	DRY	DRY	DRY	DRY	DRY
	4-Mar-05	DRY	48.03	DRY	DRY	DRY	DRY	DRY
	5-Jul-05	DRY	48.03	DRY	DRY	DRY	DRY	DRY
MW-2	26-Apr-06	27.37	48.03	20.66	0.00	0.00	0.00	20.66
	4-Feb-04	39.94	47.49	7.55	0.00	0.00	0.00	7.55
	3-May-04	34.49	47.49	13.00	0.00	0.00	0.00	13.00
	30-Nov-04	33.96	47.49	13.53	0.00	0.00	0.00	13.53
	4-Mar-05	39.83	47.49	7.66	0.00	0.00	0.00	7.66
MW-3	5-Jul-05	33.20	47.49	14.29	0.00	0.00	0.00	14.29
	26-Apr-06	38.74	47.49	8.75	0.00	0.00	0.00	8.75
	4-Feb-04	37.49	47.80	10.31	0.00	0.00	0.00	10.31
	3-May-04	35.35	47.80	12.45	0.00	0.00	0.00	12.45
	30-Nov-04	33.39	47.80	14.41	0.00	0.00	0.00	14.41
MW-4	4-Mar-05	36.05	47.80	11.75	0.00	0.00	0.00	11.75
	5-Jul-05	35.40	47.80	12.40	0.00	0.00	0.00	12.40
	26-Apr-06	36.96	47.80	10.84	0.00	0.00	0.00	10.84
	4-Feb-04	DRY	48.54	DRY	DRY	DRY	DRY	DRY
	3-May-04	DRY	48.54	DRY	DRY	DRY	DRY	DRY
MW-5	30-Nov-04	DRY	48.54	DRY	DRY	DRY	DRY	DRY
	4-Mar-05	DRY	48.54	DRY	DRY	DRY	DRY	DRY
	5-Jul-05	DRY	48.54	DRY	DRY	DRY	DRY	DRY
	26-Apr-06	23.95	48.54	24.58	0.00	0.00	0.00	24.58
	4-Feb-04	40.06	48.62	8.56	0.00	0.00	0.00	8.56
MW-5	3-May-04	30.17	48.62	18.45	0.00	0.00	0.00	18.45
	30-Nov-04	DRY	48.62	DRY	DRY	DRY	DRY	DRY
	4-Mar-05	38.52	48.62	10.10	0.00	0.00	0.00	10.10
	5-Jul-05	30.37	48.62	18.25	0.00	0.00	0.00	18.25
	26-Apr-06	37.45	48.62	11.17	0.00	0.00	0.00	11.17

*0.729 is the density of gasoline at 15oC as referenced in the API Publication 1628, Second Edition, August, 1989
 NA Not applicable

Table 2
Groundwater Gradient Data
Former Dutra Trucking, LOP #12264

Date	Gradient Direction (degrees Azimuth)	Gradient Magnitude (ft./100 ft.)
1/29/2002 *	Northwest (293.5)	10.3
2/04/2004 **	West (271)	12.53
5/03/2004 **	Northeast (71)	16
11/30/2004 ****	Insufficient data	Insufficient data
3/4/2005 **	West (278)	20.6
4/26/2006	Northwest (288)	22.87

* Gradient direction and magnitude based upon gage data from soil borings; not a product of survey.

** Gradient direction and magnitude based upon permanent monitoring well locations and survey information.

**** Gradient direction and magnitude could not be calculated due to lack of water in three of the five wells.

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Former Dutra Trucking, LOP #12264
(All units reported in parts per billion)

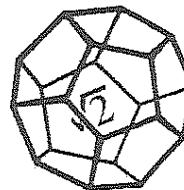
Sample ID	Sample Date	TPH as Diesel (ppb)	TPH as Motor Oil (ppb)	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Total Xylenes (ppb)	(MTBE) Tertiary Butyl Ether (ppb)	(DIPE) Diisopropyl Ether (ppb)	(ETBE) Ethyl Tertiary Butyl Ether (ppb)	(TAME) Tertiary Amyl Methyl Ether (ppb)	(TBA) Tertiary Butyl Alcohol (ppb)	(1,2 DCE) 1,2-Dichloroethane (ppb)	(1,3 DCE) 1,3-Dichlorobenzene (ppb)	(1,4 DCE) 1,4-Dichlorobenzene (ppb)	(1,2 DCA) 1,2-Dichloroethane (ppb)	(EDB) 1,2-Dibromoethane (ppb)	Chlorobenzene (ppb)
SUBSURFACE INVESTIGATION JAN. & DEC. 2002																			
B1	28-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2	28-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3	29-Jan-02	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B4	29-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5	29-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Domestic Well	29-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3	30-Dec-02	21,000	6,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HYDROGEOLOGIC INVESTIGATION, FEB. 2004 MONITORING EVENT																			
MW-1	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3	4-Feb-04	320	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	4-Feb-04	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 2004 GROUNDWATER MONITORING EVENT																			
MW-1	3-May-04	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	3-May-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3	3-May-04	860	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	3-May-04	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	3-May-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NOVEMBER 2004 GROUNDWATER MONITORING EVENT																			
MW-1	30-Nov-04	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	30-Nov-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3	30-Nov-04	9,600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	30-Nov-04	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	30-Nov-04	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MARCH 2005 GROUNDWATER MONITORING EVENT																			
MW-1	4-Mar-05	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	4-Mar-05	840	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3	4-Mar-05	170	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	4-Mar-05	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	4-Mar-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APRIL 2006 GROUNDWATER MONITORING EVENT																			
MW-1	26-Apr-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	27-Apr-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3	27-Apr-06	1500/63*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	27-Apr-06	DRY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	27-Apr-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*TPH-D results with and without silica gel cleanup

ND Not Detected
NA Not Analyzed
DRY no water in well

Appendix C

Laboratory Reports

**NORTH COAST
LABORATORIES LTD.**

May 24, 2006

Winzler and Kelly
633 Third Street
Eureka, CA 95501

Attn: Ken Thiessen

RE: 90129701-049/Dutra Trucking

Order No.: 0604525

Invoice No.: 58077

PO No.:

ELAP No. 1247-Expires July 2006

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
----------	---------------------------

01A	MW-1
02A	MW-2
03B	MW-3
04A	MW-5

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

REPORT CERTIFIED BY

Laboratory Supervisor(s)

QA Unit

Jesse G. Chaney, Jr.
Laboratory Director

North Coast Laboratories, Ltd.

Date: 24-May-06

CLIENT: Winzler and Kelly
Project: 90129701-049/Dutra Trucking
Lab Order: 0604525

CASE NARRATIVE**THIS IS AN AMENDED REPORT.**

The diesel result prior to silica gel cleanup was added per clients request.

All samples submitted for a silica gel cleanup were initially analyzed for diesel. The samples showing no detectable levels of the analyte were not subjected to the cleanup procedure.

TPH as Diesel w/ Silica Gel Cleanup:

Sample MW-3 contains material similar to degraded or weathered diesel oil.

The laboratory control sample duplicate (LCSD) recovery was below the lower acceptance limit for diesel. The laboratory control sample (LCS) recovery was within the acceptance limits; therefore, the data were accepted.

TPH as Diesel:

The low surrogate recovery for sample MW-1 may be due to the sample matrix.



Date: 24-May-06
WorkOrder: 0604525

ANALYTICAL REPORT

Client Sample ID: MW-1
Lab ID: 0604525-01A

Received: 4/27/06

Collected: 4/26/06 16:30

Test Name: TPH as Diesel

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	5/2/06	5/3/06
Surrogate: N-Tricosane	68.8	70-130	% Rec	1.0	5/2/06	5/3/06

Client Sample ID: MW-2
Lab ID: 0604525-02A

Received: 4/27/06

Collected: 4/27/06 15:05

Test Name: TPH as Diesel

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	5/2/06	5/3/06
Surrogate: N-Tricosane	72.1	70-130	% Rec	1.0	5/2/06	5/3/06

Client Sample ID: MW-3
Lab ID: 0604525-03B

Received: 4/27/06

Collected: 4/27/06 15:15

Test Name: TPH as Diesel

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	1,500	500	µg/L	10	5/2/06	5/3/06
Surrogate: N-Tricosane	77.0	70-130	% Rec	10	5/2/06	5/3/06

Test Name: TPH as Diesel with Silica Gel Cleanup

Reference: EPA 3510/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	58	50	µg/L	1.0	5/7/06	5/10/06
Surrogate: N-Tricosane	39.7	38-129	% Rec	1.0	5/7/06	5/10/06

Client Sample ID: MW-5
Lab ID: 0604525-04A

Received: 4/27/06

Collected: 4/27/06 14:55

Test Name: TPH as Diesel

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	5/2/06	5/3/06
Surrogate: N-Tricosane	76.2	70-130	% Rec	1.0	5/2/06	5/3/06

North Coast Laboratories, Ltd.

Date: 24-May-06

CLIENT: Winzler and Kelly

Work Order: 0604525

Project: 90129701-049/Dutra Trucking

QC SUMMARY REPORT

Method Blank

Sample ID MB-15656	Batch ID: 15656	Test Code: SGTPHDW	Units: µg/L	Analysis Date 5/10/06 2:13:13 PM	Prep Date 5/7/06
Client ID:		Run ID: ORGC5_060510A		SeqNo: 591461	
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec
TPHC Diesel (C12-C22)	ND	50			
N-Tricosane	24.7	0.10	50.0	0	49.5%
				38	129
					0
Sample ID MB-15630	Batch ID: 15630	Test Code: TPHDIW	Units: µg/L	Analysis Date 5/3/06 2:24:20 PM	Prep Date 5/2/06
Client ID:		Run ID: ORGC7_060503A		SeqNo: 590267	
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec
TPHC Diesel (C12-C22)	34.97	50			
N-Tricosane	42.5	0.10	50.0	0	84.9%
				70	130
					0
					J

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 24-May-06

CLIENT: Winzler and Kelly

Work Order: 0604525

Project: 90129701-049/Dutra Trucking

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID	LCSD-15656	Batch ID:	15656	Test Code:	SGTPHDW	Units:	µg/L	Analysis Date	5/10/06 12:19:41 PM	Prep Date	5/7/06
Client ID:		Run ID:		ORGC5_060510A				SeqNo:	591459		
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Diesel (C12-C22)		204.0	50	50	500	0	40.8%	41	96	0	
N-Tricosane		26.3	0.10	0.10	50.0	0	52.6%	38	129	0	

Sample ID	LCSD-15656	Batch ID:	15656	Test Code:	SGTPHDW	Units:	µg/L	Analysis Date	5/10/06 12:42:19 PM	Prep Date	5/7/06
Client ID:		Run ID:		ORGC5_060510A				SeqNo:	591460		
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Diesel (C12-C22)		193.8	50	50	500	0	38.8%	41	96	204	5.16% 15 S
N-Tricosane		24.4	0.10	0.10	50.0	0	48.7%	38	129	26.3	7.66% 15

Sample ID	LCSD-15630	Batch ID:	15630	Test Code:	TPHDIW	Units:	µg/L	Analysis Date	5/3/06 12:23:52 PM	Prep Date	5/2/06
Client ID:		Run ID:		ORGC7_060503A				SeqNo:	590264		
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Diesel (C12-C22)		389.3	50	50	500	0	77.9%	67	120	0	
N-Tricosane		47.0	0.10	0.10	50.0	0	94.0%	70	130	0	

Sample ID	LCSD-15630	Batch ID:	15630	Test Code:	TPHDIW	Units:	µg/L	Analysis Date	5/3/06 12:43:53 PM	Prep Date	5/2/06
Client ID:		Run ID:		ORGC7_060503A				SeqNo:	590265		
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Diesel (C12-C22)		405.2	50	50	500	0	81.0%	67	120	389	4.00% 15
N-Tricosane		46.2	0.10	0.10	50.0	0	92.4%	70	130	47.0	1.68% 15

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits



Chain of Custody

5680 West End Road • Arcata, CA 95521-9202
707-822-4649 • FAX 707-822-6831

p. ✓ of ✓

2251034

LABORATORY NUMBER:

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5-7 Day
☒ STD (2-3 Wk) ☐ Other:

PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms **27**

Preliminary: FAX ☐ Verbal ☐ By: / /

Final Report: FAX ☐ Verbal ☐ By: / /

CONTAINER CODES: 1—1/2 gal. pl; 2—250 ml pl;
3—500 ml pl; 4—1 L Naigene; 5—250 ml BG;
6—500 ml BG; 7—1 L BG; 8—1 L cgr; 9—40 ml VOA;
10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar;
13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO₃; b—HCl; c—H₂SO₄; d—Na₂S₂O₃; e—NaOH; f—C₂H₃O₂Cl; g—other

SAMPLE CONDITION/SPECIAL INSTRUCTIONS

GOBAL ID = 7062300197

Do I need ACT?

SAMPLE DISPOSAL

☐ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus Hand

*MATRIX: DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NONLACRIFIC SAMPLERS WILL BE RETURNED TO C. F. S.

Attention: KEN TAKESON
Results & Invoice to: WINZLER F KELLER
Address: 633 THIRD ST.
EUROPA CA 95501
Phone: 707 443 8326
Copies of Report to: _____
Sampler (Sign & Print): [Signature] KEN TAKESON

PROJECT INFORMATION

Project Number: 90129701-049

Project Name: DUTRA TROCKENUNG

Purchase Order Number:

[illegible]

RETURNED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
<i>[Signature]</i> <i>Ken Wessner</i>	4/27/83 3:35p	<i>[Signature]</i> <i>John A. Jenkins</i>	1535 4-27-86

MATRIX: DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; CW=Cooling Water

Appendix D

Winzler & Kelly SOP's

WINZLER & KELLY CONSULTING ENGINEERS

STANDARD OPERATING PROCEDURES
for
MONITORING WELL PURGING AND SAMPLING ACTIVITIES

1.0 OBJECTIVE

To establish accepted procedures for the purging and sampling groundwater from monitoring wells, to ensure that representative samples of formation water are collected by accepted methods.

1.1 Background

To obtain a representative groundwater sample from monitor wells, it is necessary to remove (purge) stagnant water from within and near the well prior to sampling. In general, three to seven casing volumes must be removed from the well prior to sampling, to provide a representative sample. Wells may be sampled after purging less than the minimum three volumes if well recharge rates are beyond reasonable time constraints. The specific method of well purging will be decided on a case by case basis, or as required by project specifications.

1.2 Personnel Required and Responsibilities

Project Manager: The Project Manager (PM) is responsible for ensuring that field personnel have been trained in the use of these procedures and for verifying that monitoring well purging and sampling activities are performed in compliance with these SOP's.

Field Technician: The Field Technician is responsible for complying with these SOP's, including the purging and sampling of monitor wells, the safe containerization of extracted waters, the documentation of field procedures, and the handling of samples..

2.0 WELL PURGING ACTIVITIES**2.1 Equipment Required**

- Bottom-filling bailer, suction air pump, air-lift pump, gas operated (bladder) pump, submersible pump, or other pumping device
- pH meter
- Conductivity/Temperature Meter
- Water Level Indicator
- Well Sampling Data Sheet
- Indelible marker
- Disposable gloves
- Containers to hold extracted water (as required)

2.2. Purging Procedure

Prior to groundwater sampling, each monitoring well will be purged as described below. Prior to insertion into each well, all equipment will be either decontaminated (following W&K Decontamination procedures) or will be deemed clean or previously unused by the manufacturer.

- Open all monitoring wells to be purged and allow to equilibrate 5 to 15 minutes. Record time and visual observations regarding well access, condition, security, etc. in log book.
 - Obtain depth to groundwater level readings according to Winzler & Kelly Standard Operating Procedures for Groundwater Level measurements and Free Phase Hydrocarbon Measurements. Record time and readings on the Well Level Measurement Data Sheet.
 - Calculate the volume of standing water in each monitoring well. Record the volume calculated for each well on the Well Sampling Data Sheet.
 - Begin purging the well by removing water from the well and collecting in a calibrated container (i.e., 5-gallon bucket marked in 1-gallon increments). The depth, or interval, from which the water is being purged should be noted on the data sheet.
 - Obtain readings of field parameters (pH, conductivity, temperature, and turbidity) and make visual observations of color/odor/turbidity at selected intervals (i.e., every gallon, every five gallons, etc.) throughout the purging process. Depending on the calculated volume and the expected number of gallons to be purged, a minimum of five readings should be collected. Record the time, readings, and visual comments on the Purge Data Sheet.
 - Continue purging until at least three (minimum) to four well volumes have been removed and the field parameters stabilize to within:

pH	≈0.1
conductivity	≈10%
turbidity	≈10%
temperature	≈1°
- Do not exceed seven well volumes.
- Obtain a final depth to groundwater level measurement prior to collection of the groundwater sample and note the reading and time on the Well Level Measurement Data Sheet. Be sure that the measurement probe has been thoroughly decontaminated prior to insertion into each well. Note any qualitative comments regarding recharge rate of each well, and calculate the percent of the original water column that has recovered at the time of the final depth measurement. It is ideal to attain a minimum of 80% water level recovery prior to sampling, if time constraints allow. Very slow recharge rates may not allow purging the minimum three volumes or 80% recovery; lesser volumes may be used for sampling, as needed and documented.
 - Collect a groundwater sample following the directions below under Section 3.0.

- Containerize all purge water and decontamination water in 55-gallon drums. Use yellow indelible markers (storeroom supply) to label all drums on the side with date, contents, origin and other pertinent information. Avoid marking the tops of drums with black marker, such marks are temporary and will soon fade/rust. Note the number, condition and location of drums on site in the field notes.

3.0 WELL SAMPLING ACTIVITIES

3.1 Equipment Required

- Disposable bailer (previously unused) *
- Bottom emptying device (sampling port)
- Monofilament nylon line (min 40-lb test)
- Monitor Well Purge & Sample Data Sheets
- Sample containers (preserved, as required) - provided by the laboratory
- Sample labels
- Indelible marker
- Disposal gloves
- Decontamination soap (Alconox)
- Distilled water for equipment decontamination.

*A variety of sampling techniques are available for the collection of groundwater samples. Except where otherwise required, W&K only utilizes disposable polyethylene bailers to collect groundwater samples.

3.2. Sampling Procedure

Prior to collecting a groundwater sample from a monitoring well, each well must be properly purged in accordance with W&K's SOP for Monitoring Well Purging Activities (See Section 2.0 above), including the measurement of the final water level and documentation of recharge.

- Water from the desired screen interval will be collected by lowering the previously unused disposable, polyethylene, bottom-filling bailer into the well.
- When bailer is completely full, carefully retract the bailer from the well casing.
- Using a previously unused, new, bottom-emptying device, to minimize agitation of the water, transfer the water from the bailer to the sample containers.
- When sampling for volatile constituents (VOA's), the water samples will be collected in 40-ml glass vials (preserved as required by the analyses requested). Precautions will be taken to prevent capturing air bubbles in the vials.
- Upon filling, each vial will be immediately capped with a Teflon septum and plastic screw cap. The vial will be checked for air bubbles by inverting and gently tapping the vial. If any bubbles are visible, the vial will be refilled and confirmed to be free of any air bubbles.

- At a minimum, all samples will be labeled with the following information:
Sample ID Date and Time Sample Collected
Location Sampler's Initials
Project Number Analyses Requested
- Sample information will be documented on the Chain-of-Custody form.
All samples will be placed in an ice chest, chilled to a temperature of 4°C. The ice chest will remain in the custody of the sampler until it is transferred to the courier service for delivery at the analytical laboratory for analyses. Any and all transfer of sample custody must be documented on the Chain-of-Custody form with the name, signature, affiliation, date and time of the persons releasing and receiving custody of the samples.
- Upon completion of the sampling activities, each well shall be closed and secured by replacing the well cap and securing the lock.
- Dispose of gloves, bailers, bottom-emptying devices, and bailing line after each use.

Appendix E

Field Notes



WATER LEVEL MEASUREMENT DATA SHEET

PROJECT NAME: DUTRA TRUCKING

PROJECT NUMBER: 901

TODAY'S DATE: 4/26/6

FIELD PERSONNEL: THRESEN

[illegible]



WINZLER & KELLY

CONSULTING ENGINEERS

633 Third Street, Eureka, CA 95501-0417
(707) 443-8326 / FAX (707) 444-8330

By THIESSEN Date 4/27/6 Client _____

Sheet No. _____ of _____

Subject DUTRA TRUCKING

Job No. 90129701

ARRIVE ON-SITE 0930, GATE TO FUEL BUCK PLANT LOCKED.
GO TO EDELINE TRUCKING TO GET GATE COMBINATION.
ALL WELLS LEFT OPEN OVER NIGHT.
BAILER LEFT IN MW-4 TO ATTEMPT SAMPLING 4/27
WELL MW-1 SAMPLED 4/26/6 WITHOUT PURGING.
NO FIELD METERS/ANALYTICAL TOOLS AVAILABLE AT W&K

X MW-4 - INADEQUATE GW FOR SAMPLING 4/26 & 4/27

PURGE
CALCS

MW-5 DTW = 11.17 TD = 25 FT WETTED PIPE = 13.83'
VOLUME PER LIN FT = 0.17 GAL X 13.83 = 2.35 GAL X 3 = 7.05 GAL
FINISH PURGING 10:15 AM. WATER TURBID
SAMPLE FOR TPN-D AT ~~10:30 AM~~. WAIT FOR RECHARGE
NOTE DURING BAILING OF WELL, DRAW DOWN WAS SUBSTAN-
TIAL. DTW 10:25 = 18.71 FT W NO ODOR OR TASTE
SAMPLED 2:55 P
4/27/6 DTW PRODUCTION WELL = 25.88' 10:25 AM

MW-2 GAGE = 8.75' TD = 20 FT WETTED PIPE = 11.25'
VOL. PER LIN FT = 0.17 GAL X 11.25 = 1.91 GAL X 3 = 5.74 GAL
10:50 COMPLETE PURGING, NO ODOR OR TASTE

MW-3 GAGE = 10.84' TD = 15 FT WETTED PIPE = 4.16'
VOL. PER LIN FT. = 0.17 GAL X 4.16 = 0.71 GAL X 3 = 2.12 GAL
FINISH PURGING 11:09 STRONG ORGANIC ODOR